Assumptions:

* Average size of a grain of sand: .2mm diameter - <http://hypertextbook.com/facts/2000/IlanaPrice.shtml>
* Average beetle size: 2cm (multiple sources)
* Maximum glass ball size: 10x beetle size, 20cm diameter
* Rhinoceros beetle can lift 850 times its own body weight
  + Say 50 times body weight
* Beetles eat all food
* Beetles can’t fly or climb over spheres that are x times larger than them
* DETERMINE EMPIRICAL DEPRESSION VALUE

Other stuff

* Solve for force to exert to wedge out of sand?
* Consider gases of different temperatures?
* Displacement ~= probability beetle will bump into sphere while scurrying around \* amount sphere will rise by
* Build an actionscript demonstration for void filling?
* Use beetle motion around edges of spheres to predict sinking motion?
* Hamiltonian of beetle motion H=T+Ug+Uf
* Have beetle crawl directly to nearest food source?
* Bigger spheres might sink faster than smaller ones because more food is kept around them
* Come up with sinking mechanism for spheres
* V ~ -\gradient(x)
* Figure out a maximum and minimum distance from sphere for sliding food problem

Beetles kick smaller spheres around, causing them to rise out of the sand pits

Tracks of the form amplitude\*{sin(2pi\*t/beetleleglength) from –beetlewidth-2\*beetleleglength to –beetlewidth, 0 from –beetlewidth to beetlewidth, -sin(2pi\*t/beetleleglength) from beetlewidth to beetlewidth + 2\*beetleleglength}

Approximate moving spheres rolling on sand as sliding over smooth, incompressible bed of sand.

Beetle tracks:

* <http://www.physics.arizona.edu/~milsom/photo/springbreak2010/springbreak2010_2.html>
* <http://uthappytrails.blogspot.com/2010/06/hills-are-alive.html>
* <http://www.thody.net/photos/death_valley_2009/beetle_tracks_death_valley.html>
* <http://www.thenakedrun.com/2009_05_01_archive.html>
* <http://home.comcast.net/~franirvin/mali09.htm>

Coefficient of kinetic friction:

* <http://www.docstoc.com/docs/27532325/Friction-coefficient-of-sandpaper-on-wood-Approximately-06-08>

Angle of Internal Friction:

<http://www.stanford.edu/~tyzhu/Documents/Some%20Useful%20Numbers.pdf>

Glass density:

<http://www.engineeringtoolbox.com/density-solids-d_1265.html>

Sand density:

<http://www.engineeringtoolbox.com/density-materials-d_1652.html>

Penetration into a viscous medium: <http://hyperphysics.phy-astr.gsu.edu/hbase/lindrg2.html#c4>

<http://en.wikipedia.org/wiki/Drag_(physics)>

Viscosity: <http://www.physics.ohio-state.edu/~reu/99reu/final_reports/paper_knappman.pdf>

EC2: <http://aws.amazon.com/ec2/faqs/#What_is_Amazon_Elastic_Compute_Cloud_Amazon_EC2>

Processor specs <http://aws.amazon.com/ec2/instance-types/>